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ABSTRACT

U.S. citizens can get two to three times the educational and employment benefits now being obtained if all government funding for youth and adult basic education and job skills training is required to be directed to two investment strategies. The first is to increase intergenerational transfer of cognitive skills. Evidence from studies suggests that focusing funds on the education of the children's parents will lead to better educated, more employable parents, and more educable children. Findings are the following: (1) better educated parents produce better educated children; (2) the parents', and especially the mother's, education level is one of the most important determinants of school participation and achievement; and (3) better educated adults demand and get better schooling for children. The second strategy is to teach using a functional context education approach to instructional design. Studies indicate that workplace literacy programs increase productivity not only at work, but also at home and in the community and schools, and that better educated adults produce safer communities conducive to learning. Youth and adult education and employment training programs should be required to obtain accountability data on the extent to which their programs improve adult participation in programs, improve achievement in functional context programs, improve prevention of future learning problems of adult students' children, and show how "double duty dollars" are being obtained. (Contains 21 footnotes.) (YLB)

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ED 432 672

Adult Basic Education: Strategies to Increase Returns on Investment (ROI)

Thomas G. Sticht, Applied Behavioral & Cognitive Sciences Inc., July 1999

It is axiomatic that government spending should produce the very most for the monies spent. In this paper I argue that there are opportunities to get what I call "double duty dollars" from the billions of dollars that are being spent by governments on education and workforce development. This can be done by following two investment strategies for adult basic education: invest in programs that increase the *intergenerational transfer of cognitive skills* and that teach using a *functional context education* approach to instructional design.

Investment Strategy #1
The Intergenerational Transfer of Cognitive Skills

Evidence from dozens of studies over the last quarter century indicates that preschool or in-school compensatory interventions for children do not, by themselves, lead to improved cognitive skills when the children complete secondary education and enter adulthood.[1] Other evidence indicates that the most important, long term, educational intervention "program" for a child is a well educated, financially comfortable parent (or major caregiver). Better educated parents produce better educated children.[2] Further, there is now evidence that investments in the education of one welfare parent may influence the school achievement of one, two or even more of the parent's children.[3] This suggests that *the focusing of funds on the education of the children's parents will lead to better educated, more employable parents and more educable children.*

Supporting Evidence for Investing in the Intergenerational Transfer of Cognitive Skills

Better Educated Adults Produce Better Educated Children

In numerous studies, the variable that has remained most influential in children's participation and success in school is parental education levels. Briefly, what has been repeatedly found in national surveys over the last half century is that, as a general trend, the more highly educated the parents, the greater the likelihood that their children will succeed in the K-12 school system, complete high school, go on to college and achieve higher levels of literacy as an adult.[4]

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[1] Sticht, T., Beeler, M., & McDonald, B. (Eds.) (1992). *The Intergenerational Transfer of Cognitive Skills. Vol. I: Programs, Policy, and Research Issues.* Norwood, NJ: ABLEX.

[2] Sticht, T. (1983, February). *Literacy and Human Resources Development at Work: Investing in the Education of Adults to Improve the Educability of Children.* Professional Paper 2-83. Alexandria, VA: Human Resources Research Organization. (ERIC No. ED 262 201)

[3] Van Fossen, S. & Sticht, T. (1991, July). *Teach the Mother and Reach the Child: Results of the Intergenerational Literacy Action Research Project of Wider Opportunities for Women.* Washington, DC: Wider Opportunities for Women.

[4] Sticht, T. & Armstrong, W. (1994, February). *Adult Literacy In the United States: A Compendium of Quantitative Data and Interpretive Comments.* Washington, DC: National Institute for Literacy.

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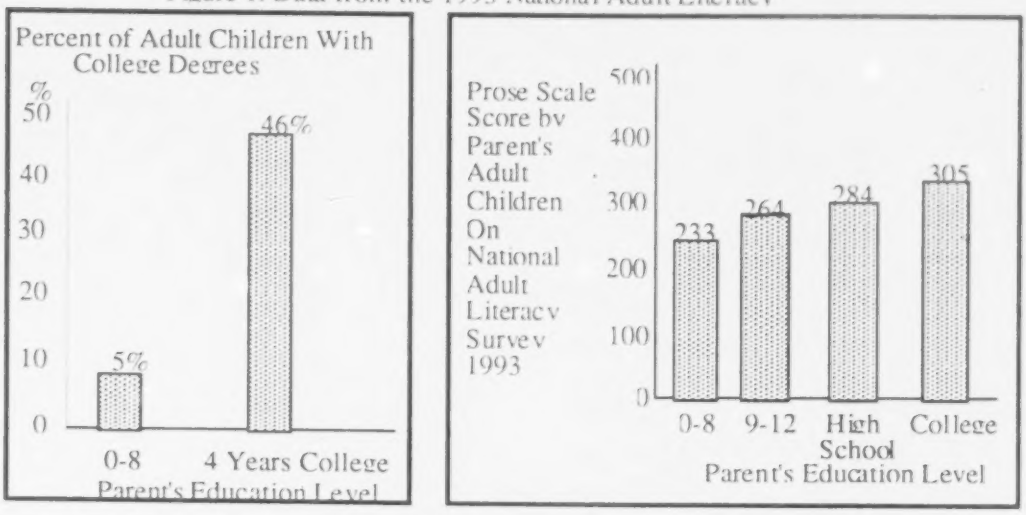
Data from the 1993 National Adult Literacy Survey in the United States show that parents' education levels are related to the development of reading skills (Figure 1). This is consistent with other surveys over the years in the United States.[4] (pp. 127-131) Similarly, in England, studies of the literacy and numeracy skills of adults indicated that those with low literacy and numeracy scores tended to come from unskilled family backgrounds and to have parents whose own educational attainment had been poor.[5] (p. 63)

Figure 1. Data from the 1993 National Adult Literacy



By and large, literacy will be found in greatest abundance where there are literates who make wide use of their literacy. It is typical to find that the homes and communities of the highly literate are likely to contain more literacy artifacts, such as signs, books, magazines, pencils, typewriters, writing paper, computers and so forth, than the homes and communities of non-literates or literates who make only restricted use of their literacy.[6]

Generally speaking, in homes where there are literate parents who use their literacy extensively, infants born into such richly nourishing cultures of literacy tend to grow literate to a large extent even before they enter into a special environment for cultivating literacy (primary school).

In the literate home and community culture, the newborn illiterate gradually acquires literacy, including the knowledge of the *forms* of literacy, such as signs, books, letters, and so forth, and the *functional uses* of literacy. Importantly, the emergent literate also acquires a *value* for literacy that is reinforced by parents and others in the literate culture of the home and community.[6]

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[5] Adult Literacy and Basic Skills Unit (ALBSU). (1993). *Parents and Their Children: The Intergenerational Effect of Poor Basic Skills*. London, England: ALBSU.

[6] Mason, J. & Kerr, B. (1992). Literacy transfer from parents to children in the preschool years. In: T. Sticht, M. Beeler, & B. McDonald (Eds.) *The Intergenerational Transfer of Cognitive Skills. Vol. II: Theory and Research in Cognitive Science*. Norwood, NJ: ABLEX.

Parents' Influences on Schooling

For schools to have an effect, they must have healthy students prepared to learn. A very large body of research in both developed and developing nations suggests that parent's, and especially mother's education level is one of the most important determinants of school participation and achievement.[7] Despite this relationship of mothers' education to children's educability, many nations have supported in the past, and many continue into the present to support policies that relegate girls and women to a secondary place in education. It is for these reasons that the United Nations called for greater equality of educational opportunities for girls and women in its declaration of the International Year of the Family.[9]

The failure to focus resources on girls and women shows itself in the international literacy statistics compiled by UNESCO. These statistics indicate that women, that is, female adults over the age of 15, comprised almost two-thirds of the 963 million adult illiterates in the world in 1990. Of the 116 million of the world's children below the age of 11 who were unable to attend primary school in 1985, almost two-thirds were girls.[10] (p. 13)

Table 1 summarizes research on the effects of mother's education on children and their educational development at various developmental stages, beginning with the role of education on the initial propensity to have children.[11] Girls' and mothers' education is important in determining fertility rates, that is, just how many children there will be in the household. The latter, in turn, is related to the preschool cognitive development of children and their subsequent achievement in school.

Given that conception and motherhood have occurred, the next question concerns the pre- and postnatal conditions that permit the birth of healthy children who will survive. Mortality rates and the health of young, preschool children determine how many children will be available to benefit from primary education. Mothers' education level is a major factor in ensuring high survival rates and healthier children with whom the schools can work.

More highly educated mothers not only produce healthier preschool children, they also produce children who are better prepared with knowledge, oral language and literacy skills upon entry into primary schooling. There is no denying the importance of preschool parent and child interaction, particularly in activities such as reading together, for the development of cognitive, oral language, and preschool literacy skills that will later serve the child well in the schools.

Finally, parents', and especially mothers' education is strongly related to children's tendency to stay in school and to achieve at higher levels. Mothers' education level is particularly important for students in the later grades of school, where more difficult assignments may make more demands on the mother's knowledge for help with

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[7] Birdsall, N. & Cochrane, S. (1982). Education and parental decision making: A two-generation approach. In: L. Anderson & D. Windham (Eds.) *Education and Development*. Lexington, MA: D. C. Heath.

[9] Sticht, T. (1994, October). *Family Literacy: A World Movement*. Orange, CA: Gateway Educational Products, Ltd.

[10] Hamadache, A. (1990). *Literacy, Human Rights, and Peace*. Geneva: UNESCO International Bureau of Education.

[11] Sticht, T. & McDonald, B. (1990). *Teach the Mother and Reach the Child: Literacy Across Generations*. Geneva: UNESCO International Bureau of Education.

homework, and where the mother's knowledge of and willingness to become involved in the schools on behalf of her children may make the difference between children's school success or failure.

Table 1

Some effects of higher levels of mother's education at different phases of child bearing and schooling.

Phase of child bearing/schooling	**Effect of higher levels of mother's education**
Before pregnancy	Higher economic productivity; better personal health care; lower fertility rates; smaller families
During pregnancy and at birth	Better prenatal care; more full-term births; higher birthweight babies; fewer learning disabilities
Before going to school	Better health care; better development of language, cognitive, and literacy skills; better preparation for schoolwork
During the school years	Higher participation rates in the schooling process; better management of homework; better advocacy for children's education and negotiation of school/child conflicts; higher academic achievement by children

Better Educated Adults Demand and Get Better Schooling for Children

Typically, providing educational services to adults stimulates a greater interest on the part of parents to become involved with the education of their children. Research by the Wider Opportunities for Women (WOW) in Washington, DC, USA, studied the effects of women's participation in basic skills training on (1) their behavior toward their children, (2) their interactions with teachers and participation in school activities, and (3) their children's behavior in school.[3]

Mothers reported that, as a result of their participation in the basic skills programs, they spent more time with their children talking about school, helping with homework, reading with their children and other activities. They also reported that they spent more time going to and helping with school activities and they talked more with teachers about their children's education. (see Figure 2, along with comparable data from the National Center for Family Literacy in 1994;[12] all improvements are statistically reliable). The WOW mothers also reported that their children liked and attended school more, and they had showed improvements in their school grades, test scores , and reading.

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[12] National Center for Family Literacy (1994). *The Power of Family Literacy*. Louisville, KY.

Figure 2. Changes in mothers' behaviors toward their children after participating in basic skills programs.

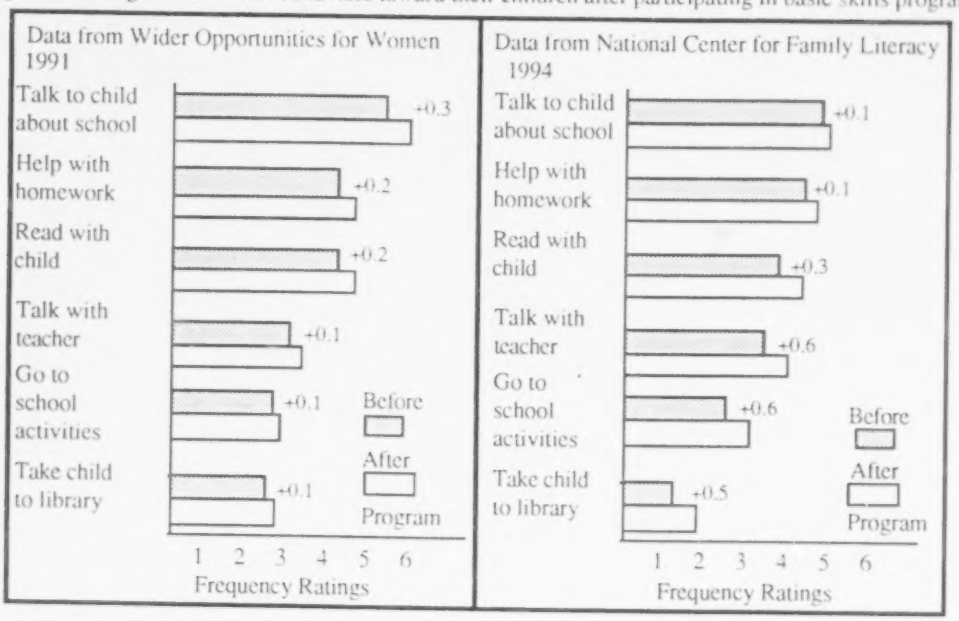

Table 2 presents samples of observations by interviewers who went to the mothers' homes to find out if there were indicators beyond the self-reports of the women that participating

Table 2. Examples of comments recorded by observers in home visits to mothers involved in the study of the intergenerational transfer of literacy skills by Wider Opportunities for Women (WOW).

Mother and child activity	Notes from home visits and interviews
Talk to child about school	"The kids say they had definitely seen a big change in their mother...she is happier and likes learning and studying with them. She "constantly" tells them how important it is to stay in school and get a good education, so they won't live like she had to." (WOW Case C)
Read with child	LD's son was glad his mother was going to school because "...she read him and his sisters stories and showed him words in the books." (MCA Case A)
Help child with homework	"The second-grader said, "I do my homework just like mommy"...and thrust his homework into the interviewer's hand." (NEW Case C)
Talk with child's teacher	"The client states...that now when she meets with the teacher, she is not intimidated and can discuss a workable solution that involves both teacher and parental support." (WOW Case B)
Take child to library	The mother states she "frequently goes to the Goodwill to purchase used books. I saw a nice collection of nursery rhymes, CAREBEARS, and other primary books in the small apartment." (WOW Case B)

in the program had some effects on the women's children. As indicated, the home observers found that children reported changed attitudes about the value of education, and that their mothers helped them with their homework and read to them more.

In other research, a teacher-researcher in an adult literacy program in California introduced activities in her welfare-to-work computer lab to help adult women who were mothers help their children with school. In a survey of 16 mothers at the end of the program the teacher-researcher found the following percentages of responses to the survey questions:

1. Will you take part in more of your children's activities such as PTA?	Yes-88%
2. Will you provide assistance and help with your children's homework?	Yes-100%
3. Will you feel more comfortable talking to your child's teacher?	Yes-100%
4. Will you provide more educational type activities for your children.?	Yes 100%

The teacher-researcher also asked the mothers, "What would you do to ensure your child's graduation from High School?" Again, 100% gave positive responses such as "I will encourage them by continuing to educate myself, and attending night school. Teaching them to be proud of their scholastic achievements." In response to another question, "Is there any other important effect the [welfare literacy] program has had or will have on your children?", several mothers mentioned an increased ability to help their children, and one stated that her children's grades had improved.[13]

The foregoing and other available research supports the conclusion that parents' education levels exert a strong, positive influence on family size, health, and the achievement of children in school. Additional research by Cochrane et al for the World Bank indicates that in Egypt and Thailand, mother's education level is positively related to higher aspirations for and participation in education by their daughters.[14] In these studies, mothers' aspirations for their daughters' education exceeded the aspirations of fathers.

The finding that mothers' education may lead to higher aspirations for and education of girls is significant because of recent research by Benavot on education, gender and economic development.[14] This cross-national research in 96 countries "found clear evidence that in less-developed countries, especially some of the poorest, educational expansion among school-age girls at the primary level has a stronger effect on long-term economic prosperity than does educational expansion among school-age boys." All of these positive effects of women's education offer compelling arguments for greatly expanding efforts to include women in literacy and adult education programs. *More than for boys and men, investments in the literacy education of girls and women bring multiple returns in learning and achievement at home and at school.*

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[13] Sticht, T., McDonald, B., & Erickson, P. (1998, January). *Passports to Paradise: The Struggle to Teach and to Learn on the Margins of Adult Education*. San Diego, CA: Applied Behavioral & Cognitive Sciences, Inc., p. 111.

[14] Cochrane, S., Mehra, K., & Osheba, I. (1986, December). *The Educational Participation of Egyptian Children. Report* No. EDT45. Washington, DC: The World Bank; Benavot, A. (1989). Education, gender, and economic development: A cross-national study. *Sociology of Education, 62*, 14-32.

Investment Strategy #2
Functional Context Education

We can teach basic skills of reading, writing, speaking, listening, arithmetic and thinking following a *functional context* approach. There is now convincing evidence that the basic academic skills of reading, writing, and mathematics can be taught within the context of teaching job skills. Workplace literacy programs in the military and in many businesses and industries have conclusively demonstrated that the teaching of job skills and basic skills can be integrated and both can be learned at the same time. However, activities such as youth and adult job training programs and literacy programs for welfare parents generally produce separate funding for basic academic skills education and job training programs based on the outmoded idea that one must first acquire the "basics" before one can benefit from job training. But *by integrating academic and jobs skills training, we can reduce the amount of time needed to both educate and train youth and adults in a job field, they can more quickly enter into employment and more rapidly return the investment in their training through tax revenues.*

For those in welfare basic skills programs, this is also a way to get "double duty dollars." We can teach those on welfare job skills and parenting skills by integrating these content areas with basic skills instruction rather than thinking that one has to first get the basic skills and then use them to learn job or parenting skills. Making such learning sequential adds to education and training time and costs, and keeps adults out of the productive workforce longer. Greater returns to education and training dollars can be obtained by changing existing programs to require the integration of basic skills, job training, and parenting education.

Supporting Evidence for Investing in Functional Context Education

Workplace Literacy Programs Increase Productivity Not Only at Work, But Also at Home and in the Community and Schools

Extensive studies in the U. S. military indicated that personnel with literacy skills above the 9th grade level who actually used their literacy skills while performing job tasks such as automobile repair or supply clerks' jobs, showed productivity increases of as much as ten to fifteen percent over adults with less than 7th grade reading skills who did not use the available support materials.[15] (p. 54) These increases in productivity from both having better literacy skills and using them far exceed what is typically obtained by capital stock increases.[16]

In recent years, due primarily to the National Workplace Literacy Program (NWLP) of the U. S. Department of Education, now replaced by the Workforce Investment Act of 1998, a body of research has emerged on workplace literacy programs in which functional context methods have been used to teach English, reading and mathematics skills integrated with job knowledge. The general results of this body of research is that such programs may contribute not only to improving adult's job-related literacy and numeracy skills, but also to

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[15] Sticht, T. (Ed.) (1975). *Reading for Working: A Functional Literacy Anthology.* Alexandria, VA: Human Resources Research Organization.

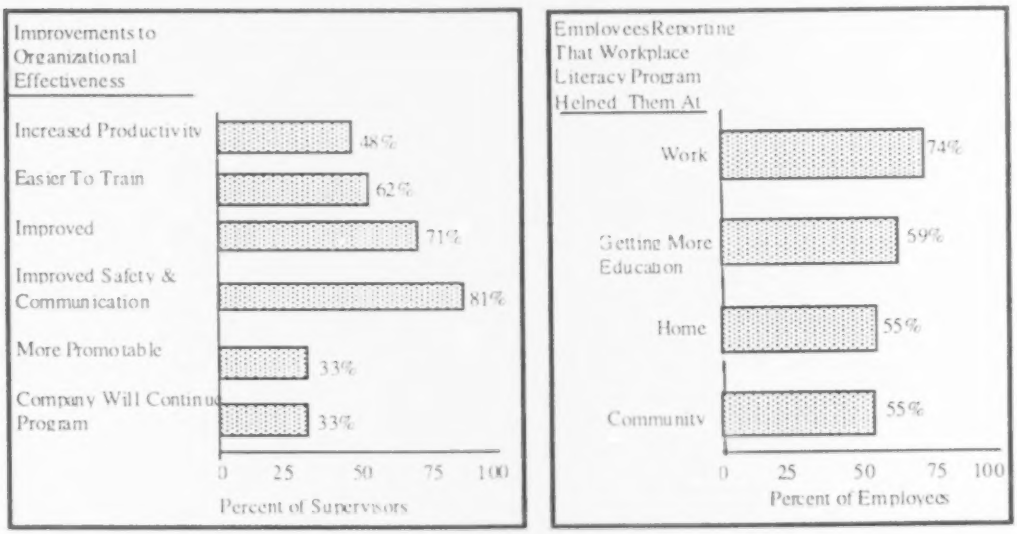
[16] National Center on the Educational Quality of the Workforce. (1995). *The Other Shoe: Education's Contribution to the Productivity of Establishments. A Second Round of Findings from the EQW National Employer Survey.* Philadelphia, PA: The University of Pennsylvania.

improved productivity on the job, increased reading to children at home, thereby better preparing them for and helping them in school, increased use of language and literacy skills in the community, and the decision to pursue further education.

In one recent study, ten manufacturing companies in the area of Chicago, USA, making products ranging from hydraulic valves to bubble gum, provided basic English language, reading and mathematics education for over 700 employees. In evaluation studies conducted in six of the companies, many supervisors reported that the programs had a variety of positive effects on organizational effectiveness, including increased productivity, employees became easier to train, their job performance, safety, and communication improved, many became more promotable, and a third of them said their companies would continue the programs.[17] (pp. 6-9)

The majority of the employees themselves said that the workplace literacy programs had helped them not only at work, but also at home and in the community, and most were encouraged to seek further education.

Figure 3. Effects of Workplace Literacy Programs in the Chicago Area, 1994



As these and other studies show, an investment in functional context education at work may provide "double duty dollars," returning benefits not only on the job, but also at home, in the community and at school. Importantly, these benefits to organizational, individual, family and school effectiveness occur directly following adult literacy programs and serve to make the current workforce more productive. *To accomplish the improvement of the workforce through the formal school system with children would mean that, not only would many schools have to become much more effective than they are today, it would take several generations to replace the present workforce. The economic return to investment in adult education is immediate.*

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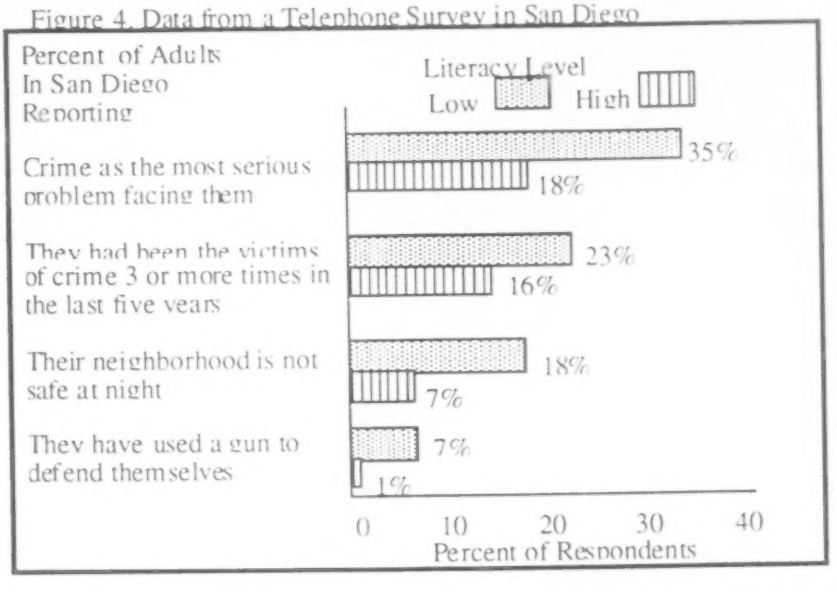
[17] Sticht, T. (1994, May). *Workplace Literacy Programs for Ten Manufacturing companies near Chicago, Illinois*. El Cajon, CA: Applied Behavioral & Cognitive Sciences, Inc.

Better Educated Adults Produce Safer Communities Conducive to Learning

In a five year program of research, Shirley Brice Heath and associates studied a wide variety of different community organizations serving inner-city youth in the United States.[18] (p.5) They found that over 90 percent of the organizations were described by local city officials as serving "communities suffering from poverty, crime, severe ethnic tensions, teenage pregnancies, and broken homes."

A study of the community being served by four adult continuing education centers in San Diego, California confirmed many of the findings of Heath and associates.[19] (p. 16) Compared to the total San Diego area, in the inner-city community there was more crime, teenage pregnancy, high infant mortality, unemployment, and poverty. Importantly, more than one in five of the adults 25 years of age or older in the inner-city community had fewer than nine years of education, while in the surrounding communities less than one in 17 of the adults had fewer than nine years of education.

Figure 4. Data from a Telephone Survey in San Diego



In San Diego, a telephone survey of over 500 adults produced a sample similar to that in the U. S. Census (Figure 4). The survey included questions to divide the adults into five literacy knowledge levels based on their knowledge of authors, magazine titles, famous people, and vocabulary words. The survey revealed that, compared to adults in the higher literacy levels, those in the lowest level were younger, less well educated, and made-up of more minority members. They were also more likely to think that their neighborhoods were

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[18] Heath, S. & McLaughlin, M. (1993). *Identity and Inner-City Youth: Beyond Ethnicity and Gender*. New York: Teacher's College Press.

[19] McDonald, B., Huie, C., Sticht, T., & Grimes, W. (1994,April). *Learning in the Action Research Center (ARC) Community: Inquiry, Reflection, and Change in the Delivery System for Continuing Education Services for Adults in the San Diego Community College District*. El Cajon, CA: Applied Behavioral & Cognitive Sciences, Inc.

not as safe as other San Diego neighborhoods, crime was more serious and, in general, they did not feel as secure as those in the more affluent, higher literacy levels (Figure 4).[20]

Communities of better educated adults who are workers, citizens, and parents may attract better paying jobs into the community which provide a higher tax base that will support better social services (law enforcement, day care, recreational facilities, transportation, etc.), and promote a safer, supportive community that can produce drug and violence free schools and influence better teaching and greater success for children in school .

In one workplace education project in the U.S., management, labor union members, and educators got together at AC Rochester in upstate New York, a supplier of components for General Motors automobile manufacturing, and developed adult education programs in basic education, English as a second language, secondary school completion and basic reading skills programs. This was done because it was discovered that many employees could not benefit from training that was needed to convert the manufacturing plant to a high performance organization in which each worker had to take on more responsibility for quality control, work scheduling and so on. As a consequence of the company's reorganization and education programs, a new billion dollar contract was signed with a foreign nation and General Motors moved new work into the plant.[21] (pp. 49-55) This suggests that organizational changes and greater investments in adult education may lead to economic growth in the community and provide a better tax base for community activities and facilities.

Conclusions and Recommendations

The foregoing evidence, though admittedly primarily circumstantial, supports the argument that we can get two to three times the educational and employment benefits that are now being obtained by requiring that all government funding for youth and adult basic education and job skills training develop programs that maximize the *intergenerational transfer of educational benefits* from parents to children and through *functional context education* programs integrate basic skills instruction with job and parenting skills training.

Accountability. All these youth and adult education and employment training programs should be required to obtain accountability data on the extent to which their programs (1) improve participation of adults in programs, including the daily attendance and retention of adults long enough to make real gains in learning, (2) improve achievement in functional context programs, including what makes the programs functional context programs, how learning in the programs is improved over earlier programs, and how transfer to contexts outside the programs has been improved, (3) improve prevention of future learning problems of adult students' children by stimulating the intergenerational transfer of cognitive skills and positive attitudes about education from adults to children, including how many children are affected in what ways, and (4) show how "double duty dollars" are being obtained in adult education programs to capture the multiple returns to investment in adult education.

A focus on adult literacy education gives immediate payoffs in making adults more productive in the workplace *today*, thereby stimulating the present economy without

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[20] Sticht, T., Hofstetter, R., & Hofstetter, C. (1995). *Knowledge, Literacy and Life in San Diego*. El Cajon, CA: Applied Behavioral & Cognitive Sciences, Inc.

[21] Rosow, J. & Zager, R. (1992). *Job-Linked Literacy: Innovative Strategies at Work. Part II: Meeting the Challenge of Change: Basic Skills for a Competitive Workforce*. Scarsdale, NY: Work In America Institute.

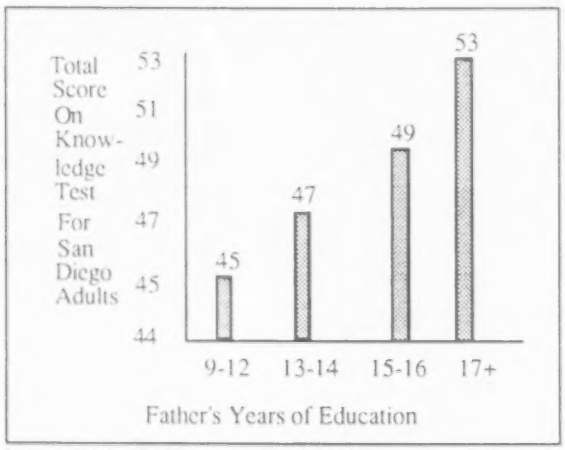
waiting for years for children to grow up and replace the present workforce. Through the intergenerational transfer phenomenon, the adult's education can transfer back to the homeplace where children can be better prepared for the schoolplace. Thus, for our adult education and workforce development monies, we may get double, triple or even quadruple duty dollars. Governments and others should recognize that through these multiplier effects, investments in adult literacy education can give a very good ROI.

Research Note

Knowledge is Power: The Intergenerational Effects of Parent's Education

In an innovative telephone interview researchers in San Diego assessed area resident's literacy-related and vocabulary knowledge. Using a random dialing method that produced a sample closely resembling the U. S. Census population, over 530 San Diego area, English-speaking adults, aged 18 years and above, were asked about their knowledge of famous authors, magazines, people, and vocabulary words.

Among the many interesting results of the survey were the findings that the intergenerational effects of parent's education on their adult children's knowledge was apparent. Father's education was statistically significantly related to the total knowledge score made-up of all four tests combined, while mother's education was related to the magazine knowledge test. Additionally, father's education was related to how much reading their adult children engaged in, while mother's education was not. This suggests that by helping parents gain more education, we are helping to create a second generation of adults who read more and know more. Since knowledge is power, investment in parent's education helps to empower the next generation.



Source: Sticht, T., Hofstetter, C. & Hofstetter, C. (1996). Assessing Adult Literacy by Telephone. Journal of Literacy Research, 28, 525-559

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